

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Previously Presented) A lithographic apparatus comprising:  
a support structure configured to hold a patterning device, the patterning device configured to pattern a projection beam with a pattern in its cross-section;  
a substrate table configured to hold a substrate; and  
a projection system configured to project the patterned beam onto a target portion of the substrate, wherein a joint between an element of the projection system and its support comprises an inorganic layer comprising (i) metal, (ii) ceramic, (iii) glass, or (iv) any combination of (i) – (iii), and comprises glue protection.
2. (Original) A lithographic apparatus according to claim 1, further comprises a liquid supply system configured to at least partially fill a space between the projection system and the substrate, with a liquid.
3. (Previously Presented) A lithographic apparatus according to claim 2, wherein the element is configured to come into contact with the liquid.
- 4.-5. (Cancelled)
6. (Original) A lithographic apparatus according to claim 1, wherein said joint comprises a direct bond.
7. (Original) A lithographic apparatus according to claim 1, wherein the joint was made without heating.
8. (Original) A lithographic apparatus according to claim 1, wherein the joint was heat treated.
9. (Original) A lithographic apparatus according to claim 8, wherein the joint has been heat treated to 900°C.

10. (Original) A lithographic apparatus according to claim 8, wherein the joint is made by the interaction of clean surfaces.
11. (Original) A lithographic apparatus according to claim 8, wherein the joint is made by the interaction of clean surfaces, sealed with a low temperature glass solder and heat treated to 600°C.
12. (Original) A lithographic apparatus according to claim 8, wherein the element of the projection system and its support are doped with boron.
13. (Original) A lithographic apparatus according to claim 12, wherein the joint is made by the interaction of clean surfaces, sealed with a low temperature glass solder and heat treated to 600°C.
14. (Original) A lithographic apparatus according to claim 1, wherein the inorganic layer comprises a metal solder.
15. (Original) A lithographic apparatus according to claim 14, wherein the metal solder is indium.
16. (Original) A lithographic apparatus according to claim 1, wherein the element and its support are made of glass.
17. (Original) A lithographic apparatus according to claim 16, wherein the element and its support are made of fused silica.
18. (Previously Presented) A lithographic apparatus according to claim 1, wherein the joints between all parts of the projection system configured to be immersed in a liquid comprise an inorganic layer.
19. (Original) A lithographic apparatus according to claim 1, wherein the element is a lens.

20. (Previously Presented) A lithographic apparatus comprising:  
a support structure configured to hold a patterning device, the patterning device configured to pattern a projection beam with a pattern in its cross-section;  
a substrate table configured to hold a substrate; and  
a projection system configured to project the patterned beam onto a target portion of the substrate, wherein a fluid tight joint between an element of the projection system and its support comprises a direct bond by which molecules of the element and its support chemically interact.
21. (Original) A lithographic apparatus according to claim 20, further comprises a liquid supply system configured to at least partially fill a space between the projection system and the substrate, with a liquid.
22. (Previously Presented) A lithographic apparatus according to claim 21, wherein the element is configured to come into contact with the liquid.
23. (Previously Presented) A lithographic apparatus according to claim 20, wherein the joint comprises (i) a metal layer, (ii) a ceramic layer, (iii) a glass layer, or (iv) any combination of (i) – (iii).
24. (Original) A lithographic apparatus according to claim 23, wherein the joint comprises a layer of glue protection.
25. (Original) A lithographic apparatus according to claim 20, wherein the joint was made without heating.
26. (Original) A lithographic apparatus according to claim 20, wherein the joint was heat treated.
27. (Original) A lithographic apparatus according to claim 26, wherein the joint has been heat treated to 900°C.

28. (Original) A lithographic apparatus according to claim 26, wherein the joint is made by the interaction of clean surfaces.
29. (Original) A lithographic apparatus according to claim 26, wherein the joint is made by the interaction of clean surfaces, sealed with a low temperature glass solder and heat treated to 600°C.
30. (Original) A lithographic apparatus according to claim 26, wherein the element of the projection system and its support are doped with boron.
31. (Original) A lithographic apparatus according to claim 30, wherein the joint is made by the interaction of clean surfaces, sealed with a low temperature glass solder and heat treated to 600°C.
32. (Original) A lithographic apparatus according to claim 20, wherein the joint comprises a layer of metal solder.
33. (Original) A lithographic apparatus according to claim 32, wherein the metal solder comprises indium.
34. (Original) A lithographic apparatus according to claim 20, wherein the element and its support are made of glass.
35. (Original) A lithographic apparatus according to claim 34, wherein the element and its support are made of fused silica.
36. (Previously Presented) A lithographic apparatus according to claim 20, wherein the joints between all parts of the projection system configured to be immersed in a liquid comprise an inorganic layer.
37. (Original) A lithographic apparatus according to claim 20, wherein the element is a lens.

38. (Previously Presented) A lithographic apparatus comprising:  
a support structure configured to hold a patterning device, the patterning device configured to pattern a projection beam with a pattern in its cross-section;  
a substrate table configured to hold a substrate; and  
a projection system configured to project the patterned beam onto a target portion of the substrate, the projection system having a lens, a lens support and an inorganic material providing a fluid tight seal between the lens and the lens support wherein the seal was made without heating.

39. (Currently Amended) A lithographic apparatus according to claim 20 38, wherein the inorganic ~~layer~~ material comprises (i) a metal layer, (ii) a ceramic layer, (iii) a glass layer, or (iv) any combination of (i) – (iii).

40. (Original) A lithographic apparatus according to claim 38, further comprising a direct bond between the lens and the lens support.

41. (Original) A lithographic apparatus according to claim 38, wherein the lens and the lens support are made of glass.

42. (Previously Presented) A lithographic apparatus comprising:  
a support structure configured to hold a patterning device, the patterning device configured to pattern a projection beam with a pattern in its cross-section;  
a substrate table configured to hold a substrate; and  
a projection system configured to project the patterned beam onto a target portion of the substrate, the projection system having a lens, a lens support and a direct bond, by which molecules of the lens and the lens support chemically interact, providing a fluid tight seal between the lens and the lens support.

43. (Previously Presented) A lithographic apparatus according to claim 42, further comprising (i) a metal layer, (ii) a ceramic layer, (iii) a glass layer, or (iv) any combination of (i) – (iii) at a joint between the lens and the lens support.

44. (Original) A lithographic apparatus according to claim 42, wherein a joint between the lens and the lens support was heat treated.
45. (Original) A lithographic apparatus according to claim 42, wherein the lens and the lens support are made of glass.
46. (Previously Presented) An immersion projection system manufacturing method comprising joining an element of a projection system, that in use in a lithographic apparatus comes into contact with a liquid, with its support using an inorganic layer comprising (i) metal, (ii) ceramic, (iii) glass, or (iv) any combination of (i) – (iii), and glue protection, direct bonding, or both.
47. (Cancelled)
48. (Original) The method according to claim 46, comprising heat treating the element and its support.
49. (Original) The method according to claim 48, wherein the joining comprises creating a joint by the interaction of a clean surface of the element and a clean surface of the support.
50. (Original) The method according to claim 46, wherein the inorganic layer comprises metal solder.
51. (Original) The method according to claim 46, wherein the element and its support are made of glass.
52. (Original) The method according to claim 51, wherein the element and its support are made of fused silica.
53. (Previously Presented) The method according to claim 46, comprising joining all elements of the projection system configured to be immersed in a liquid with their respective supports using an inorganic layer.